

# LI Gain Curves

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Collaboration meeting, Oct 05

# Situation at the calibration workshop

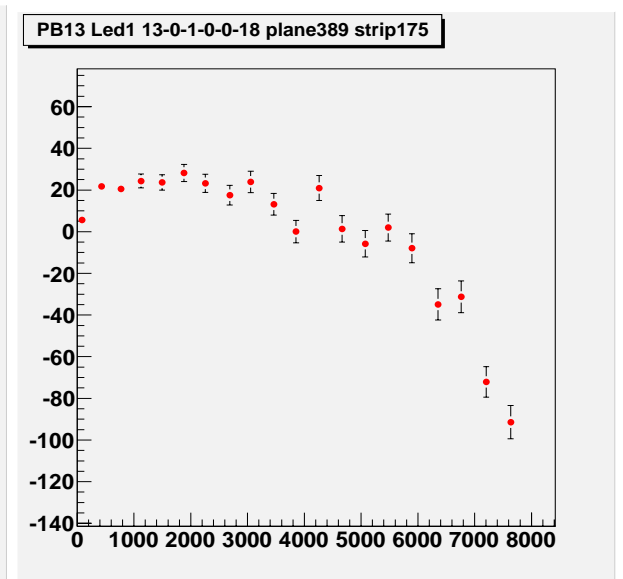
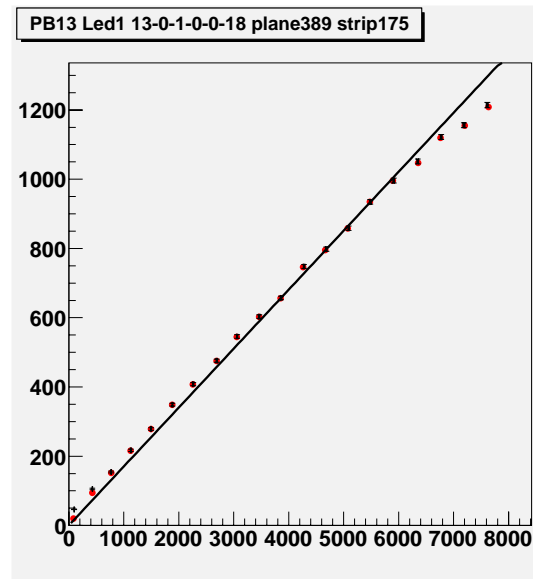
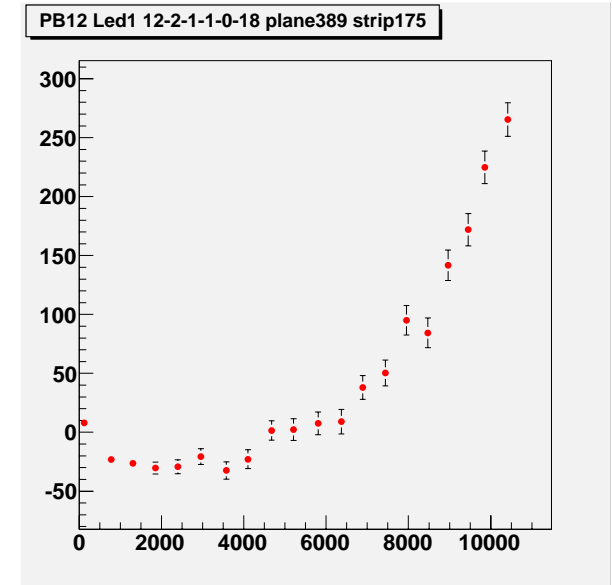
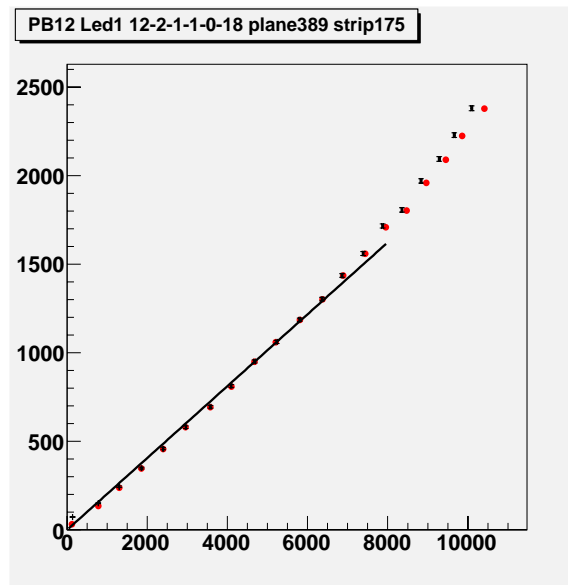
- Plotted near and far PMT ADC v high gain and low gain PIN ADC
- Four plots, mostly the near PMT saturates, not very useful
- Far PMT v high and low gain PIN
  - one may be linear the other non-linear
- Same PMT, therefore conclude that the PIN ADC is non-linear (or that there is a cancellation between the PIN and PMT non-linearities.....)
- Non-linearities can be up to 5-10%, seem similar for a given PIN

# Since

- I have plotted near PMT v Far PMT for the same strip
  - Hope that the far PMT is in the linear region and we can correct the near PMT
- Usually the near PMT is saturating and only a few points are in the supposedly linear region
  - Select PMTs which do not reach saturation
  - Somewhat biased set of data
- Also two VFBs were swapped to try to see if the effect went with them
  - Some confusion about what was and should have been swapped

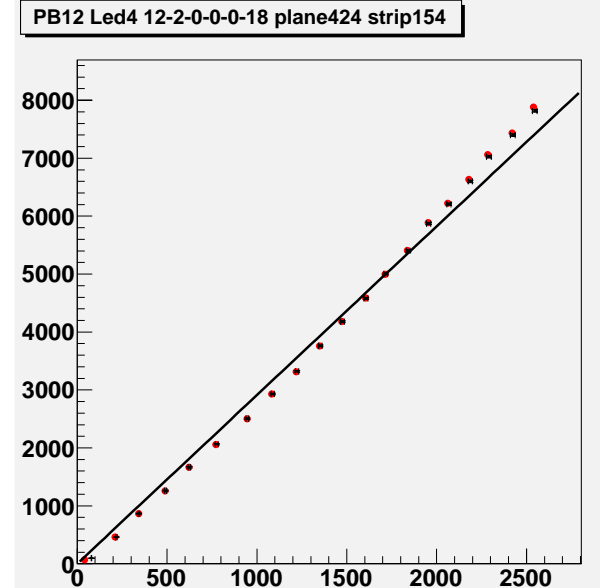
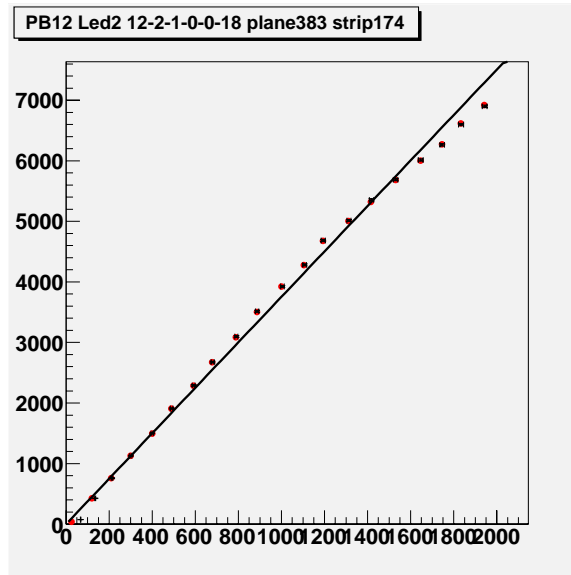
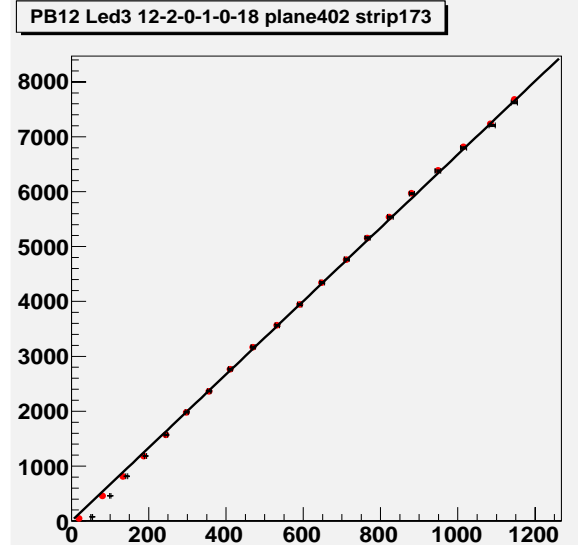
# Near v Far PMT

- Top plot one end, bottom the other, lit by different LEDs
- There is a non-linearity down to ~3000 ADCs
- Non-linearity flips as we go from one end to the other
- One of the PMTs is non-linear?
- Non linearity seems to go with the PIN but it could be just with the detector side?



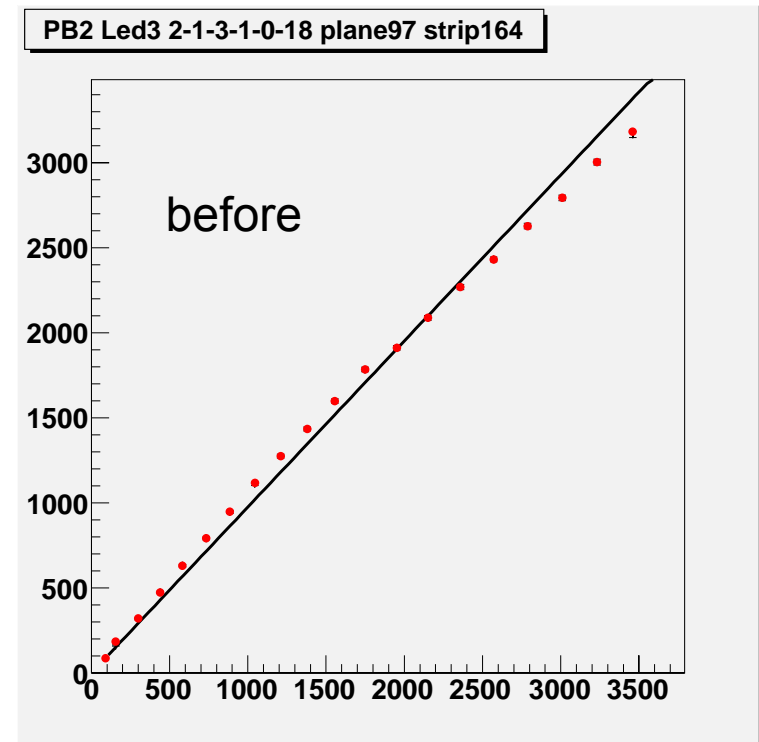
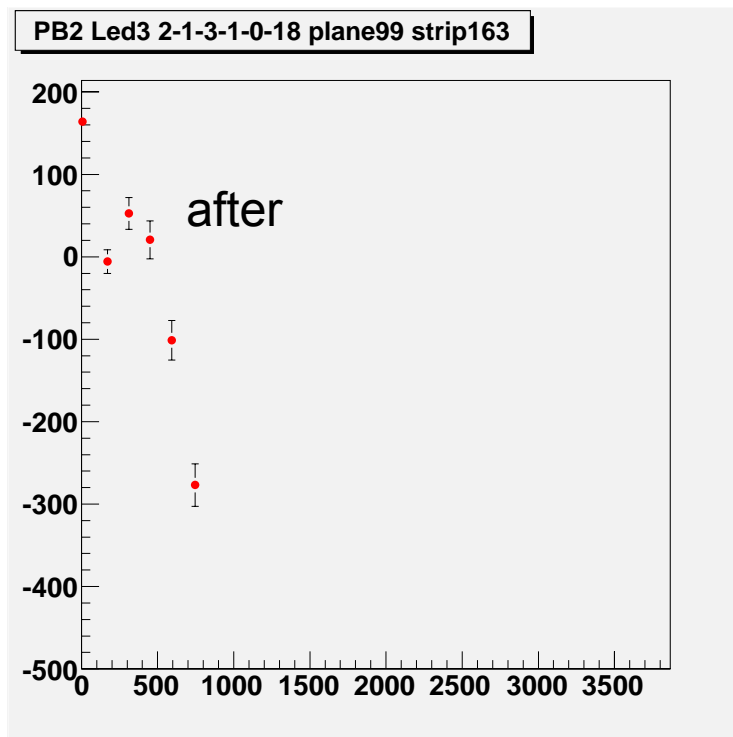
# Near v Far

- Non-linearity can bend either way or neither



# Effect of the VFB swap

- Some confusion, I thought we were going to swap the VFB card for the PIN, one that showed an effect and one that didn't.
- In fact, I think, the card for the PMT reading the strip was swapped (need to check again)
- Made no difference



# Conclusions

- Both the PMTs and the PINs show non-linearity
- Given Pat's observation of jumps corresponding to the field reversal, I wonder whether something is being affected by the field?
- Run LI with the field off? As far as I can be told there do not exist any LI runs when the field was off during installation.